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ABSTRACT

10 A variable reflectance mirror employing a super-twisted nematic (STN) liquid
crystal cell to control reflectivity. The STN liquid crystal cell includes a layer of STN
liquid crystal material formed between a pair of transparent electrodes, where a polymer
alignment layer is formed over the electrodes so as to orient the STN liquid crystal
material to possess a twist angle between approximately 180° and approximately 270° . A
pair of crossed polarizers are respectively positioned on the outer surfaces of the front
and rear plates. A layer of reflective material is further formed adjacent to the outer
surface of the polarizer adjacent to the rear plate. The transparent electrodes are
15 connected to a voltage source to apply an electrical bias across the STN liquid crystal
layer, where the transmittivity of the STN liquid crystal layer to light can be varied by
varying the electrical bias applied across the transparent electrodes to vary the
birefringence of the STN liquid crystal layer. The degree of reflection provided by the
variable reflectance mirror is adjusted by adjusting the electrical bias applied across the
20 STN liquid crystal layer. A stacked IC control circuit is provided for controlling the
electrical bias applied across the STN liquid crystal layer.

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